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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/988,948

11/19/2001

Antonio Jose Colmenarez

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10/01/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

TUCKER, WESLEY J

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,948

Applicant(s)

COLMENAREZ ET AL.

Examiner

Wes Tucker

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4 and 5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. On page 2 of the specification there is a URL.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 12-14, and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 6,160,923 to Lawton et al.

With regard to claim 1, Saneyoshi discloses a system for displaying a driving scene to a driver of an automobile (Fig 1, elements 10, 20, 30, and 9).

Saneyoshi further discloses step a) at least one camera having a field of view and facing in the forward direction of the automobile and capturing images of the driving

scene, the images comprised of pixels of the field of view in front of the automobile (Fig.1, element 10).

Saneyoshi discloses step b) a control unit that receives the images from the camera and applies a noise filtering to the pixels comprising the received images, the filtering improving the quality of the image of the driving scene received from the camera when degraded (column 4, lines 59-65). Saneyoshi does not explicitly disclose a salt and pepper filter for use specifically with the image when degraded by a weather condition. Lawton discloses that it is well known in the art to use a median filter to automatically filter extreme brightness values such as salt and pepper noise and it follows that this kind of filter would improve an image degraded by a weather condition such as snow (column 2, lines 13-24). Therefore it would have been obvious to one of ordinary skill in the art to use a well known median filter as taught by Lawton to remove extreme brightness noise values in the noise removing filter of Saneyoshi in order to better enhance the driving image.

Saneyoshi further discloses c) a display that receives the images from the control unit after application of the filtering operation and displays the images of the driving scene to the driver (Fig.1, element 9).

With regard to claim 2, Lawton discloses a median filter (column 2, lines 13-24).

With regard to claim 12, Saneyoshi discloses wherein the display is just below the driver's field of view (Fig. 1, element 9). Saneyoshi does not disclose that the

display is a heads-up display. The examiner takes official notice that heads-up displays (HUD) are well known in the art to be super-imposed on the driver's or operator's field of view so that the driver does not have to look away from his/her path and natural field of view to view the display. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to implement the display of Saneyoshi as a heads-up display so that the driver or operator need not look away from his/her path and natural field of view in order to view the display.

With regard to claim 13, Saneyoshi discloses wherein the control unit further applies image recognition processing to the image following the filtering (column 8, lines 50-64).

With regard to claim 14, the discussion of claim 1 applies. Saneyoshi and Lawton disclose a method used in the system disclosed.

With regard to claim 16, Saneyoshi discloses wherein the step of noise filtering of the pixels comprising the images is followed by the step of applying image recognition processing to the filtered pixels (column 8, lines 50-56).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 6,160,923 to

Lawton et al. and further in view of publication "SUSAN-A New Approach to Low Level Image Processing" by Stephen M. Smith et al. hereinafter referred to as Smith.

With regard to claim 3, Saneyoshi and Lawton disclose a filtering that removes salt and pepper noise, but do not explicitly disclose a SUSAN filter. Smith discloses that the SUSAN filter clearly integrates the best aspects of the best of existing noise reducing filters, including edge-preserving filters (p.68, below equation (36)). These are all desirable characteristics in the combination of Saneyoshi and Lawton since Saneyoshi seeks to determine shapes of objects and preserving edges and removing noise is essential to the process. Therefor it would have been obvious to one of ordinary skill in the art at the time of invention to use the SUSAN filter as taught by smith in order to provide the best noise removal and edge preserving filter for use in removing noise while preserving shapes for detection.

Claims 4-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 6,160,923 to Lawton et al. and further in view of U.S. Patent 6,219,447 to Lee.

With regard to claim 4, Saneyoshi and Lawton disclose the system of claim 1, but do not disclose wherein the control unit further applies a histogram equalization operation to the intensities of the pixels comprising the filtered images, the histogram

equalization operation further improving the quality of the images of the driving scene when degraded by the weather condition. Lee discloses the practice of histogram equalization in order to enhance images (column 2, lines 54-67). Lee teaches that the histogram equalization serves to enhance the appearance of the contrast of the image (column 1, lines 20-24) and that it may be performed in an active section of video image (abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the histogram equalization as taught by Lee to enhance the already filtered video image of Saneyoshi and Lawton in order to enhance the contrast appearance of the image.

With regard to claim 5, Saneyoshi discloses wherein the control unit applies image recognition processing to the images following the histogram equalization operation (column 8, lines 50-55).

With regard to claim 6, Saneyoshi discloses wherein the control unit applies image-recognizing processing to the images to identify objects therein of at least one predetermined type (column 8, lines 50-55).

With regard to claim 7, Saneyoshi discloses wherein objects of the at least one predetermined type comprise at least one selected from the group of: pedestrians, other automobiles, traffic signs, traffic controls, and road obstructions (column 8, lines 50-55).

With regard to claim 8, Saneyoshi discloses wherein objects of the at least one predetermined type identified in the images are enhanced by the control unit for display by the display (column 4, lines 60-67 and column 5, lines 1-20). Here the image types are considered to be enhanced by the filter and distance histogram for display enhancement.

With regard to claim 9, Saneyoshi discloses wherein the control unit further identifies features in the images of at least one predetermined type (column 8, lines 57-65 and column 8, lines 15-19 and Fig. 14). Here Saneyoshi discloses determining edges or groups of images and their distances. The groups determined and the distances are considered image features.

With regard to claim 10, the discussion of claim 9 applies. The features are determined for display.

With regard to claim 11, Saneyoshi discloses wherein the features of at least one predetermined type comprise borders of the roadway (Fig. 14)

With regard to claim 15, the discussion of claim 4 applies.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

9-23-04


Jon Chang
Primary Examiner